

Nederland's combined heat and power plant

Lessons Learned (so far)

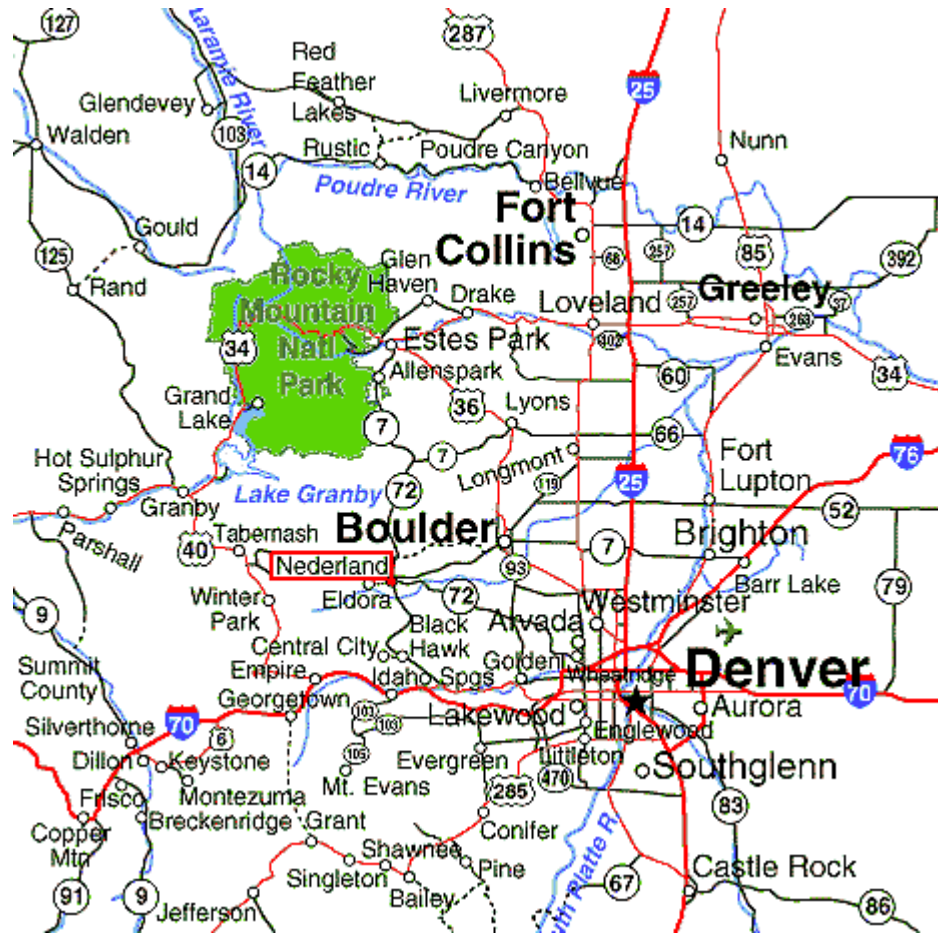
The Problem

- Nederland, Colorado is located in southwest Boulder County
- The last major forest fire was in the 1890's
- Suppression efforts produced:
 - Thousands of acres of “dog hair” tree growth
 - Weak forests susceptible to beetle kill (now beginning its second generation)
 - Drought has made this worse

Nederland, Colorado



Nederland, Colorado



The Problem (continued)

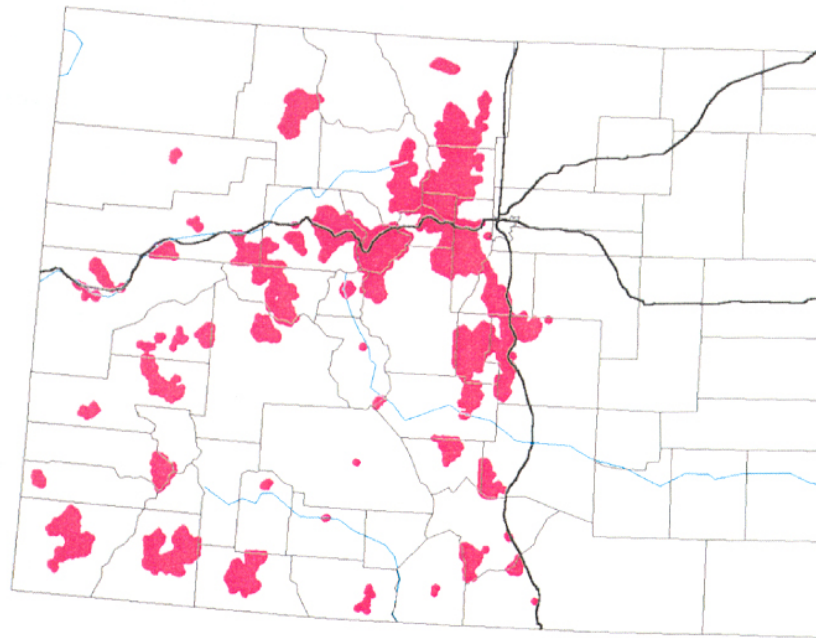
- Population increased 40% in the 1990's
- Homes have been built on the last land left
 - Steep slopes
 - Inadequate public water supplies
 - Resistance to cutting trees for wildfire mitigation
 - Subdivisions with one exit

Typical Forest Growth



Red Zone

Interface Areas of High Forest Fire Risk
In Colorado



 Red Zone

979,851 people (2000 Census)

474,000 homes

6,304,969 acres



Energy Requirement Opportunity

- In 1995 Nederland reacquired its old Elementary School to be reused as a community center
- 33,000 square feet
- Extremely energy inefficient design
- Proposed Bond issue for \$1.5 million to refurbish the center

Then the Opportunity



First Response



Partnership

- OEMC
- USFS
- CSU
- Colorado State Forest Service
- EPA
- Town of Nederland
- Delta Dynamics

Combined Heat and Power Plant (one year later)



A Success Story

Economics of slash changed

From charging homeowners \$5 per cubic yard to giving them a tax deduction

From paying \$4,000 per month for natural gas for the center to providing a local job

A Success Story

From worrying about wildfire to knowing you
at least tried to do something about it

From being an energy user to becoming a
producer...

BUT there are lessons to be learned

Lessons Learned

Chip Supply, Quality, Delivery, Handling

Supply

Even though we are in the Red Zone, chips do not come automatically... but being overly concerned about their supply should not stop a project.

Chip Supply



Lessons Learned

Chip Quality

Not all chips are created equal. Our system is designed to have as few choke points as possible but it still can not accept rocks, long sticks, other foreign objects. When we take the slash and chip it, it works, when we accept chips it is problematic.

Lesson Learned

Chip Handling

After looking at other systems we decided to design a system that minimizes vertical movement and angles

Chip Storage



Chip Movement



Chip Movement



Lessons Learned

Interaction of Cultures

Buyer (A Government) vs. Supplier (Start-up Company)

Government Needs: Process,
Approvals, Audits, Reports, Inspections

Start-Up Company Needs: Cash flow,
Single Contact, Quick Decisions

Lessons Learned

Cultures, continued

In supplying steam to the current community center we added a third party, the contract operator of our current HVAC system... sort of like the computer hardware/software business...

Lessons Learned

Design Issues (when this was the first time for everyone)

We knew what we did not want, what to avoid, and what the desired outcome was

We did not know all of the details to get there

Lessons Learned: Site Planning



Site Planning, continued



Lessons Learned

Budget

Our partners put about \$120,000 into the project.

Delta Dynamics (our supplier) on paper put \$20,000 in the project but it will be a lot more in the end

We put about \$400,000 including some in-kind into the project (so far)

Lessons Learned

Budget, continued

We created one full time job so far

We are saving about \$30,000 in natural gas (at current prices) a year

We have enough excess energy (about 75% of the total) to do something beyond the new center complex

Lessons Learned

Budget, continued

We have made it possible for individual homeowners to do fire mitigation and get rid of slash – and in the most environmentally sensitive way possible

If we prevent one wild fire we will be way ahead

Summary

There are two questions:

Would you do it again?

Should you do it again?

Thanks from the people of Nederland



Please contact me for more
information

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